

P A P E R S
ON
AGRICULTURE;

CONSISTING OF
COMMUNICATIONS

MADE TO THE
*Massachusetts Society for Promoting
Agriculture,*

WITH
EXTRACTS FROM VARIOUS PUBLICATIONS,

BY THE TRUSTEES OF THE SOCIETY.

Boston :
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1804.

AGRICULTURE

1. The importance of agriculture in the United States
2. The progress of agriculture in the United States
3. The future of agriculture in the United States

COMMUNICATIONS

1. The importance of communications in the United States
2. The progress of communications in the United States
3. The future of communications in the United States

MANUFACTURES

1. The importance of manufactures in the United States
2. The progress of manufactures in the United States
3. The future of manufactures in the United States

COMMERCE

1. The importance of commerce in the United States
2. The progress of commerce in the United States
3. The future of commerce in the United States

FINANCE

1. The importance of finance in the United States
2. The progress of finance in the United States
3. The future of finance in the United States

LABOR

1. The importance of labor in the United States
2. The progress of labor in the United States
3. The future of labor in the United States

CONCLUSION

1. The importance of the United States in the world
2. The progress of the United States in the world
3. The future of the United States in the world

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PREFACE.

THE Trustees of the Massachusetts Society for promoting Agriculture offer the public their collection of papers for 1804, being the 7th number of their publications. The pamphlet consists of a few original communications, believed interesting and seasonable, and of selections from foreign works adapted to the use of cultivation in this country. It will be remembered that the object and duty of the board is to convey to practical farmers through the press, the agricultural information which they receive or learn from others. Whilst on this account, they are not responsible for the accuracy of every statement or the justness of every opinion contained in their books, they mean to insert nothing, which is not recommended by the appearance of novelty, ingenuity or utility. They are satisfied the series of papers, which they have laid before the public, including the present pamphlet, will be found to contain, not only some highly interesting articles of natural history, but valuable hints and facts respecting several of the leading parts of husbandry. Though in many instances the methods of cultivation in use may be the best which, considering the capital of the farmer, the comparative value of labour and land, and other circumstances, can be adopted, yet in other instances much room exists for improvement. It cannot be doubted that information conveyed in printed works may be subservient to the correction of errors in opinion and practice, and to the diffusion of good modes of culture.

Those who take the trouble to prepare this publication are aware, that in this subject theory is good
for

for nothing till sanctioned and confirmed by experience; that old modes of husbandry ought to be held in respect and changed with caution and moderation,* and that *farming by books* merely, is justly derided. At the same time they are convinced that Agriculture derives aid from the discoveries and labours of the philosopher, the naturalist and the chemist; that principles grow out of practice; and that inquiry is the road to improvement. They have no more respect for a bigoted attachment to injudicious customs, than for a rash spirit of innovation; nor can they ascribe wisdom or modesty to those, who think their own practice comprises all that is or can be known, and refuse to read printed documents, which relate the observations and experiments of others.

The different results of the experiments on *potatoes*, as related in the two first papers of this collection, will naturally excite attention, and probably put those, who are not satisfied about planting large or small potatoes, eyes, or cuttings, upon further trials of the different methods.

The observations on the *progress of vegetation* in the next paper, comprise a part of natural history, which is evidently applicable to the use of agriculture. A sufficient number of notices of this kind would afford the best sort of almanac for regulating seed time. It is hoped gentlemen in various parts of the country will frame and fill up similar tables. Where the several trees, shrubs and plants, here mentioned are wanting, they may be supplied by other kinds. The field or the wood will compensate the deficiency of the garden.

We publish a new confirmation and illustration of Mr. Cooper's doctrine and practice, respecting
seeds,

* "Nor thou the rules, our fathers taught, despise,
Sires by long practice and tradition wise."

SOTHEY'S TRANS. GEORGICS, B. i. v. 115, 116.

seeds, as related in a letter of his in a former number, and it is to be wished that every farmer will endeavour to test and be able to verify them for himself.

The sketch of *soils and manures* must be useful to all who would have the habit of discriminating the several species of each, and adapting culture accordingly; and the analysis of *lime* and *marl* requires so much knowledge of chemistry only as can be learned and applied by the common farmer. The treatise on the culture and preparation of *hemp* being intended for the inhabitants of Canada, is of course applicable to our instruction.

The efficacy of *salt in curing clover* is proposed to the serious attention, and the careful experiments of farmers. The documents here published will show how much reason there is to expect it will be found highly beneficial; and the *premium* offered by the trustees, is added to other inducements, for giving it further trials.

The files of the Society contain a number of sets of answers to Agricultural Questions sent out by the trustees some years ago. They delay making use of what they have in hopes of more. Will farmers, into whose hands they are put, favour them with their answers, that they may proceed to give the public the information received either entire or digested? For this and other assistance in fulfilling their office, the trustees look not only to intelligent individuals, but to the agricultural associations in different parts of the state, to some, or most of which they are already indebted; and to one for the first document in this pamphlet.

In the name of the Society, the trustees repeat their request to these associations for original communications, and their assurances of ability and readiness to publish for their and the general benefit whatever novel, interesting or seasonable matter, they shall put at their disposal.

PREMIUMS

PREMIUMS

Offered by the TRUSTEES of the MASSACHUSETTS SOCIETY for promoting AGRICULTURE.

1st. **T**O the person who shall discover an effectual and cheap method of destroying the Canker-worm, and give evidence thereof, to the satisfaction of the trustees, on or before the 1st day of October, 1805, a premium of *one hundred dollars*, or the Society's gold medal.

2d. And a premium of *one hundred dollars*, or the Society's gold medal, to the person who shall, on or before the 1st day of December, 1805, discover an effectual, and the cheapest method of destroying the Slug-worm, and give evidence thereof to the satisfaction of the Trustees.

3d. An annual premium of *thirty dollars* for each year, previous to 1805, to the person who shall introduce into the state of Massachusetts a ram or ewe for the purpose of propagating a breed of sheep superior to any in the state at the time they are so introduced. If from a foreign country *fifty dollars*. Claims to be presented on or before the 1st of October, annually.

4th. To the person who shall produce the largest quantity of wool, meat and tallow, from the smallest number of sheep, not less than one score raised on his own farm, a premium of *thirty dollars*; to be claimed on or before the 1st day of August, 1805.

5th. To the person who shall, in one year, by a method new and useful, or that shall be an improvement on the methods already practised, make the greatest quantity of compost manure in proportion to the expense; to be of a good quality, and composed of materials common to most farms; the quantity to be at least two hundred tons; and the claims to be accompanied with a description of the yard or place, and the mode in which the same is made; a premium of *fifty dollars*, or the Society's gold medal. And for the next greatest quantity, being not less than one hundred tons, *thirty dollars*. Claims to be presented previous to the 1st of August, 1805.

6th. To the person who shall shew by actual experiment, on not less than two acres, to the satisfaction of the Trustees, a new or improved, being the best and cheapest method, of introducing fine grass, fit for hay or pasture, into low fresh meadows, now producing coarse wild grass, or bushes, a premium of *thirty dollars*. Claims to be presented before the 1st of November, 1804.

7th. To the person who shall discover any species of grass, not commonly cultivated or known, of a quality for the food of neat cattle or horses, equal or superior to those now in use, *fifty dollars*. Claims to be presented on or before the 1st of October, 1804.

8th. To

8th. To the person who shall present to this Society the most complete (being nearly complete) Hortus Siccus, exhibiting distinct specimens of the greatest variety of grasses in general use, and specify, to the satisfaction of the Trustees, their respective qualities, productiveness and usefulness as food for different kinds of animals, the Gold Medal, and *fifty dollars*; to be claimed on or before the 1st of October, 1805.

9th. To the person who shall produce, from seed, the best growth of thrifty trees, not less than 600 in the whole, and in the proportion of 2400 to the acre, of any of the following kinds of forest trees, viz. oak, ash, elm, sugar maple, beech, black or yellow birch, chestnut, walnut or hickory, *twenty-five dollars*; if all of oak, *fifty dollars*. Claims to be made on or before the 1st of October, 1806.

10th. To the person who shall ascertain by accurate analysis, the constituent parts of several fertile soils respectively, and in like manner the parts of several poor soils, and thus shall discover the defects of the latter; and shall show, by actual experiments, how the said defects may be remedied by the addition of earths or other ingredients, which abound in the country, and in a manner that may be practised by common farmers, *fifty dollars*. And if it shall appear, to the satisfaction of the Trustees, that, upon an extensive practice, the improvement of the poor soil would be more than equivalent to the expense of the improvement, the addition of *one hundred dollars*. A minute description of the several soils, and all the circumstances attending the processes, cultivation and results, will be required. Claims to be made on or before November, 1804.

11th. To the person who shall, by actual experiment on a quantity not less than half a ton, shew the best method of curing clover hay with salt; regard to be had to the quality of the hay and the saving of labour, and the shortness of time between cutting and packing it in the mow, the silver medal or *thirty dollars*; and to the person who shall shew the next best method, *twenty dollars*. Samples of the hay to be exhibited 3 months after it is cured to a majority of the selectmen or to the settled minister and justice of the peace in the vicinity. Claims to be made on or before the last Friday of November, 1804.

12th. It is required that the communications, for which the foregoing premiums are offered, be accompanied with proper certificates from the Selectmen, Magistrates or Clergymen of the vicinity, or other vouchers, to the satisfaction of the Trustees; that they be delivered in without names, or any intimation to whom they belong; that they be severally marked in such a manner as each claimant shall think fit; the claimant sending also a paper, sealed up, having on the outside a corresponding mark, and on the inside his name and address.

By Order of the Trustees,
JOHN AVERY, Secretary.



AGRICULTURE.



ORIGINAL PAPERS.

CULTURE OF POTATOES.

*Communication to the Brookfield Agricultural Society, sent
for publication to the Trustees.*

IN cultivating potatoes, the manure which my experience has led me to the choice of, is the dung thrown from the stalls of neat cattle. The hay or straw, which commonly becomes mixed with it, I believe to be not at all injurious. This manure is much preferable to horse-dung, which, for several years, (following the practice of my father,) I made choice of for potatoes, until I became convinced, that it was not so suitable for this purpose, as the former, on account of its breeding worms in the hill, much to the injury of the potatoes.

When the Spanish potatoe was introduced among us, which was between thirty-five and forty years ago, it was the invariable practice, for a number of years, in preparing the seed for planting, to cut the potatoes in small pieces, with one eye each piece. This practice answered very well with that species of potatoes, while it was almost the only one cultivated. But as different kinds were introduced, thro' inattention they became intermixed, and by planting them in this mixed state, I soon discovered a sensible depreciation of every species. Suspecting the cause, I became more careful in selecting my seed. My only object, however, was to separate the different species without paying any regard to size. I further adopted the practice of planting my potatoes whole ; having been convinced

ed there was nothing gained by cutting them, unless it was some of the largest ; and my practice was to plant the large and small promiscuously. The consequence was a great inequality in the size of the potatoes and the growth of the tops. In searching for the cause of such unequal vegetation, in the same season and in the same soil, equally manured, after thirty years experience and observation in digging potatoes, I have, for some years past, been convinced, from the skeleton of the seed potatoe, which, at the time of harvesting, often remains in perfect shape and size, that large potatoes produce a much more luxuriant growth, both above and beneath the earth, than small ones ; for when I come to a hill of stocky luxuriant tops, I have learned to anticipate a plentiful yield of large potatoes, in which expectation I am seldom disappointed. And hence I was of opinion, that by selecting such for seed, the crop would be more equal in size and superior in value.

Having been for some years established in this belief, my faith was a little staggered upon reading the communication of JOSEPH BARRELL, Esq. to the Massachusetts Agricultural Society, on this subject. I therefore determined the last spring, to satisfy myself respecting the best method of procedure, so far as a single experiment, upon a small scale, might answer the purpose. Mr. BARRELL, from his experiments, is convinced, that small potatoes are as good for seed as large ; that three in a hill are better than a larger number ; that cut potatoes are better than whole ; and that the eyes are best of all. The result of my experiment was the reverse.

On one side of my field, where the soil appeared perfectly uniform and which was equally manured, I made my experiment in the following manner : I began by planting three rows (leaving however the outside row) with eyes, carefully taken from large handsome potatoes, putting seven in a hill. I next planted three rows with potatoes of the same size, cut in small pieces,
with

with an eye in each piece, putting five pieces in every hill. I next planted three rows adjoining, with three small potatoes (of the size of a walnut with the shell) in a hill. Next to these I planted three rows with two large potatoes in each hill. I then drove a stake into the ground at each division, and cut a letter in each, to prevent mistake. The eyes I believe all sprouted and came up ; but the tops through the season were slender and dwarfish. Between the cuts and small potatoes there was no visible difference ; they were, however, considerably more luxuriant than the rows planted with eyes. The branches of the large potatoes overtopped the others to a great degree. The season, from the middle of August, was uncommonly dry, which considerably injured the crop. About the last of September, the appearance of the tops indicating that they had come to their full growth, I dug them carefully with my own hands, leaving none of the bigness of an ounce ball. I dug of each twenty-seven hills, carried them to a green spot, counted and measured them carefully, but did not ascertain their weight. The result was as follows :

From 27 hills planted

with eyes, 381 potatoes,	measuring	$2\frac{6}{8}$ pecks ;
with cuts, 465 do.	do.	$4\frac{1}{2}$ do.
with small, 539 do.	do.	$4\frac{6}{8}$ do.
with large, 530 do.	do.	7 do.

It is worthy of notice, that the potatoes raised from the eyes, cuts and small, were of all sizes ; a few only of them were as large as any in the field, and many of them were so small as to be scarcely worth picking up, while the produce of the large ones were of an equal and handsome size. It is also deserving notice, that the other parts of the field, which was all planted with large potatoes, uniformly yielded a crop similar to the three rows planted in the same manner.

I am, gentlemen, &c.

BENJ. ADAMS.

Brookfield, Jan. 31, 1084.

T.

To the Rev. Doct. PARKER, Corresponding Secretary of
the Massachusetts Society for Promoting Agriculture.

SIR,

YOU may remember I sent the Agricultural Society the result of an experiment I made the last year, on planting *twelve eyes of one single potatoe*, which was 232 potatoes from the eyes, and 22 *very small*, from the core without skin or eye cut into 6 pieces.—*I then noted that those from the core were all of the Irish apple kind, THE SAME AS THE POTATOE PLANTED, and those from the eyes were all of another kind, much like the English whites.*

On the 30th of April last, I planted on *high dry land*, with the common manuring of the farmer, and as the potatoe fields are generally planted, *a part of the produce* which was raised from the single potatoe last year, viz : Of the 232, I cut from 185 potatoes 1596 eyes, which weighed just 8 pounds ; these I planted in 5 rows and 3 quarters of a row, 240 feet long ; *they did not sprout for a long time, as the season was very dry, and I began to be discouraged, until the rains came, and brought up all that would sprout, and the shoots, in general, were very feeble ; I counted the sprouts, and found only 1015 shoots, consequently 581 eyes never vegetated at all ; some of these I dug up, and found them as dry as parchment, and nearly as thin ; from which I conclude I cut the eyes too thin. Deducting the proportion of weight of the 581 eyes which did not vegetate, it left the weight of those that did, only about 5 pounds ; these 5 pounds, therefore, produced (including the produce of the 22 small ones mentioned below) 17 bushels and 1 peck of very fine sizeable potatoes which weighed 81 pounds per bushel, consequently 1397 pounds. The 22 small ones were planted whole in the remaining quarter of the sixth row ; these, in general, were not bigger than large cranberries, the produce of the core of last year, and all of them of the Irish apple*

apple kind. 18 of these, only, vegetated, and the produce 165 potatoes, great and small; SOME OF THE IRISH APPLE KIND, AND SOME LIKE THE ENGLISH WHITES.—*The cores of the 185 potatoes I cut into 465 pieces, and planted in the 7th row; of these only 112 sprouted; these came up long before the eyes, and appeared flourishing the whole season, and produced 2470 potatoes which measured 4 bushels and three pecks. Note, the produce of these cores were not small (as from the core of the first potatoe,) but all sizeable, some very large, AND ALL OF THEM WERE LIKE THE ENGLISH WHITES, AND NOT ONE LIKE THE ORIGINAL IRISH APPLE.*

Upon the whole, from this experiment, I find

	Pounds.
The actual produce gathered was 22 bushels. } wt. 81 lb. per bushel is }	1782
Note, If the 581 eyes had vegetated and produced in the same proportion the 1015 did, the weight would have been }	800
And if the 47 potatoes, (which were used,) the remainder of the first years crop, had been planted, and produced in the same proportion, it would be }	654
	<hr/> 3236

equal to 40 bushels from one potatoe the *second year*, and that a very dry season, and the Irish apple potatoe (upon which the experiment was made) is a very indifferent bearer in all seasons.

The piece of land, on which I made the experiment, was 240 feet by 24. I planted seven rows the whole length, (and might have made an eighth,) this piece contains 640 square yards, which is about two fifteenths of an acre.

If, therefore, 640 square yards did produce 22 bushels you will find 4840 square yards (the contents of an acre) will produce 166 bushels, and in this proportion was actually the produce *this dry season*, and if the season had been favourable, and the 581 eyes which did
not

not vegetate, had produced ONLY *in this same proportion*, it would make 240 bushels to the acre, and this from 60 pounds weight of eyes, or about three pecks measured, which is three hundred and twenty-four fold.

If, therefore, any farmer is so blinded by prejudice as to continue planting from 10 to 15 bushels upon an acre, which will weigh from EIGHT TO TWELVE HUNDRED POUNDS OF SEED, and is content to harvest from SIXTY TO ONE HUNDRED BUSHEL AS THE PRODUCE, instead of planting SIXTY POUNDS OF EYES, *that will measure about THREE PECKS OF SEED*, from which he will harvest *two hundred bushels and upwards*, on such experiment and advice is thrown away ! I should advise to cut the eyes about half as thick again as the back of a common case-knife which I suppose would vegetate in a dry season.

Note, The potatoes, after the eyes are cut out, are, for every purpose of feeding cattle, as good as before, *and the large ones are good for family use*.

I wish some gentleman could satisfactorily answer the following questions :

How came the produce of the core of the first potatoe (which was Irish apple) to be all of the Irish apple kind *and very small*, and the produce of the *eyes* of the same potatoe to be *all* of another sort, and good, sizeable, and some very large ? How came the small ones, which were the produce of the core the last year, and *all of the apple kind*, to produce this year, both the apple kind and those like the English whites ? How came the produce of both the eyes and the core of those planted this year, to be all like the English whites, such as were planted, and those from the cores *not small* as last year, but *as large*, in proportion, as those from the eyes.

I would just mention, that the potatoes produced from the Irish apple, which are like the English whites, *are very much better than the Irish apple*.

I am Sir,

your most humble servant,

JOSEPH BARRELL.

Observations of the Progress of Vegetation, made at Cambridge, from 1793 to 1796, inclusive ; by JAMES WINTHROP, Esq. F. A. A. and F. H. S. and of the Agricultural Society.

TABLE I. Time of Bloffoming.

<i>Plant.</i>	<u>1793</u>	<u>1794</u>	<u>1795</u>	<u>1796</u>
Asparagus,	15 May	15 May	6 June	
Apple,	29 April	29 April	10 May	4 May
Apricot,	16 April			
Currant,	20 April	23 April	5 May	24 April
Cherry,	17 April	23 April	6 May	27 April
Elm,	27 March	7 April	4 April	8 April
Gooseberry,	12 April	23 April	1 May	23 April
Grape,	16 June	22 June	25 June	24 June
Honeysuckle,	15 May	15 May	27 May	21 May
Lilac,	7 May	4 May	15 May	13 May
Lime,	27 June		29 June	28 June
Lily,	19 June		29 June	28 June
Nectarine,	15 April			29 April
Horse Chesnut,		15 May	16 May	
Peach,	20 April	23 April	27 April	23 April
Pear,		29 April	10 May	
Plum,	16 April	19 April	7 May	30 April
Quince,	11 May	11 May	25 May	18 May
Tulip,		5 May	10 May	12 May
Raspberry,	22 May		1 June	1 June
Pink,			1 July	24 June
Willow,	16 April	19 April	27 April	22 April
Black Poplar,		17 April		21 April
Syringa,	22 May	27 May	4 June	30 May
Dama. Rose,	7 June		14 June	15 June
White Rose,	23 May	20 May	10 June	1 June
Oak,	11 April	18 April	24 April	22 April
Birch,	29 April			18 April
Maple,		18 April		17 May
Button,		27 April	7 May	
Ash,			24 April	
Snowball,			15 May	15 May

By the bloffoming of the Button, is intended only the opening of the bud, so as to discover the ball ; for the tree, in reality, does not discover its bloffom to an observer.

Table

TABLE II. Of first open Leaves.

<i>Plant.</i>	1793	1794	1795	1796
Apple,	9 April	18 April	24 April	22 April
Apricot,		28 April	7 May	23 April
Currant,	25 March	24 March	24 April	10 April
Cherry,		19 April		27 April
Elm,	6 May	1 May	8 May	6 May
Gooseberry,	25 March	3 April	17 April	10 April
Grape,	9 May	3 May	10 May	29 April
Honeyfuckle,	28 Feb.	23 March		8 April
Lilac,	28 Feb.	January	17 April	10 April
Lomb. Poplar,	29 April	21 April	7 May	29 April
Peach,		21 April		27 April
Plum,	13 April	19 April	2 May	23 April
Blk. Poplar,	12 April	19 April	7 May	23 April
Quince,	11 April	19 April		1 May
Rose,	beg. April	January	April	March
Raspberry,	25 March	24 March		8 April
Strawberry,	beg. March	January	April	March
Syringa,	7 April	3 April	17 April	16 April
Willow,	4 April	18 April	17 April	16 April
Pink,	beg. April	January		March
Lily,	11 April	January	1 April	March
Snowball,	6 April	21 April	25 April	23 April
Oilnut,	20 April	22 April		3 May
Oak,		1 May	11 May	
Mulberry,		5 May		
Wh. Mulberry,	12 April	21 April	10 May	4 May
Asparagus,	24 April	25 April		23 April
Lime,	1 May	2 May	9 May	5 May
Button,	6 May	1 May	7 May	1 May
Horse Chesnut,		21 April	27 April	1 May
Tulip,		1 April	April	1 April
Althea,				22 May

Several of these plants put out their leaves so early as to loose them again by freezing. Such plants seem rather to be nourished than injured by hoar frost, and unless the freezing be very severe and followed by sudden heat, their leaves do not appear to suffer materially from the freezing degree of cold. They will for a little while bear a degree of cold several degrees below freezing.

Table

TABLE III. Containing several ripe fruits and esculent plants, according to the first specimens in each year, as I met with them in my own garden or elsewhere.

<i>Fruit, &c.</i>	1793	1794	1795	1796
Asparagus,	15 April	20 April	26 April	24 April
Strawberries,	27 May	27 May	11 June	3 June
Pease,	28 May			12 June
Cherries,	29 May		June	
String-beans,	15 June			27 June
Raspberry,	26 June		3 July	
Turnips,	20 June			
Apricots,	1 Aug.	24 July		
Nectarines,				6 Sept.
Peaches,	15 Aug.	20 Aug.		6 Sept.
Plums,	Aug.	Aug.	29 Aug.	3 Sept.
Melons,	Aug.	15 Aug.	20 Aug.	27 Aug.
Grapes,	30 Aug.	28 Aug.	12 Sept.	17 Aug.
Gooseberries,		16 July	July	July
Currants, red,		25 June	29 June	26 June
white,		25 June	25 June	28 June
black,		16 July	Aug.	

If these minutes had been originally made with a view to publication, I would have taken care to fill the blanks. They are, however, more numerous, and placed in a more compact form, than any others that I have seen, and I hope they will be the means of stimulating some of our associates to bring forward their observations, that by a comparison we may endeavor to bring this branch of knowledge to perfection.

The preceding observations chiefly relate to those plants which have a perennial root. They may be of use to determine when the ground is warm enough to receive the seeds of annual plants. With respect to these, it is of importance that we should know at the time of planting, when we may reasonably expect them to be in eating. Unless we are careful to multiply and vary our experiments, and to publish all of

them that come to our knowledge, we can never hope for a regular succession of fresh vegetables, which is the perfection of a garden. It is to contribute toward so desirable an end, that the following experiments are communicated, and I hope, by the united endeavors of our society, with other institutions of the same kind, that we shall have agriculture as much a subject of calculation as astronomy is at present.



TABLE of the growth of Indian Corn, and the number of days from planting for each period of growth.

<i>Planted.</i>	<i>Sprouted.</i>	<i>Taffelled.</i>	<i>Silked.</i>	<i>Eatab. green.</i>	<i>Season.</i>
1792 May 4	12 May 8	30 June 57	14 July 71	1 Aug. 89	very dry
1793 April 23	6 May 13	26 June 64	10 July 78		
	26 8 May 12	19 June 54	5 July 70	23 July 88	
	27 8 May 11	21 June 55	5 July 69		
July 15	22 July 7	24 Aug. 40	15 Sept. 61	10 Oct. 86	excessive dry
1794 May 3	15 May 12	27 June 55	12 July 70	29 July 87	not very dry
June 21	28 June 7	28 July 37	13 Aug. 53	1 Sept. 72	
1796 April 27	15 May 18	10 July 74	24 July 88		

The principal circumstance which caused any difference of growth, appears to be the time of planting. What was planted about the beginning of May, appears to have required from 86 to 89 days to be fit for eating. What was planted earlier, took longer time to come forward, and did not ripen at so early a date as that at the beginning of May. That planted in July lost in the fall the time it gained in summer, and furnished green corn for the beginning of October. The specimen planted about the middle of June, kept its growth the whole summer, and became fit for eating in 72 days. Not much appears to depend on the character of the season.

Summary

Summary of observations made on the leafing and flowering of trees, near Boston, and on the first specimens of ripe fruit and esculent vegetables from 1797 to 1803, inclusive, by JAMES WINTHROP.

<i>Tree or Plant.</i>	<i>First Leaves.</i>	<i>First open Flowers.</i>
Almond,		13 April
Althea,	22 May to 5 June	
Apple,	28 April to 5 May	28 April to 15 May
Apricot,	23 to 29 April	20 April to 4 May
Asparagus,		
Ash,		26 April
Birch,		19 April
Button,		7 May
Cherry,	19 April to 4 May	25 to 29 April
Currant,	31 March to 3 April	28 April to 14 May
Elm,	4 to 11 May	31 March to 18 April
Fig,	23 May	
Filbert,	2 to 4 May	
Gooseberry,	31 March to 3 April	27 April to 7 May
Grape,	3 to 22 May	20 June to 2 July
Honeysuckle,	21 March to 8 April	21 May to 8 June
Horse Chestnut,	1 to 10 May	14 to 24 May
Larch,	1 May	
Lilac,	2 to 4 April	10 to 16 May
Lime,	3 to 8 May	21 to 30 June
Lily,	31 March to 5 April	28 June to 6 July
Locust,		12 June
Maple,		20 April to 2 May
Mulberry blk.	5 May	30 May
Mulberry wh.	4 to 18 May	26 June
Nectarine,	30 April	20 April to 14 May
Oak,	10 to 15 May	16 to 23 May
Oilnut,	3 to 8 May	June
Passion Flower,		7 July
Peach,	10 to 30 April	20 April to 13 May
Pear,		4 May
Pink,	March	29 June to 8 July
Plum,	1 to 8 May	25 April to 14 May
Poplar,	2 to 10 May	20 to 24 April
Quince,	1 to 15 May	21 to 31 May
Raspberry,	3 to 8 April	28 May to 2 June
Rose, damask,	12 April to 1 May	9 to 18 June

Tree

<i>Tree or Plant.</i>	<i>First Leaves.</i>	<i>First open Flowers.</i>
Senna,	15 May	21 June
Snowball,	25 April to 4 May	15 May to 1 June
Strawberry,	March	27 April to 17 May
Syringa,	3 to 19 April	28 May to 8 June
Tulip,	27 March	14 to 21 May
Walnut,	3 to 16 May	
Willow,	4 to 16 April	23 April to 8 May

*First specimens of Fruits and Esculent Vegetables, from
1797 to 1803 inclusive.*

Asparagus,	21 to 30 April	Melons,	15 to 27 Aug.
Almonds,	18 Sept.	Nectarines,	6 Sept. to
Apples,	August	Peaches,	15 Aug. to 6 Sept.
Apricots,	12 to 13 Aug.	Pears,	
Cherries,	29 May to	Plums,	26 Aug. to 3 Sept.
Currants,	25 to 29 June	Raspberry,	4 to 9 July
Figs,		Strawberry,	27 May to 3 June
Filberds,		String Beans,	15 June to 3 July
Gooseberries,	16 July	Pease,	28 May to 12 June
Grapes,	22 Aug. to 12 Sept.		

Cambridge, 22d Feb. 1804.

MY DEAR SIR,

I wish the foregoing list of observations was more extensive and complete. They were made merely that I might obtain a general knowledge of our climate and its variations. As I know of no others that have been made, I send them to the society, in hopes that it may incite others to do better, and to complete what is now merely begun.

I am, Sir,

Your very humble servant,

JAMES WINTHROP.

Dr. DEXTER.

ON SOILS AND MANURES.

FROM THE "NEW FARMER'S CALENDAR," 4th EDIT. LOND. 1802.

BY the soil, is generally understood, the upper stratum, or covering, of the earth, which is the object of cultivation; the next layer, or bed of earth, is termed the sub-soil. The component parts of soil or mould, of whatever colour, proper for vegetation, are Argill, Sand, Water, and Air; for unto these original principles may all earths be reduced, however blended, or joined with apparently foreign substances. Argill is the soft and unctuous part of clay. The primitive earths, argill and sand, contain each, in perhaps nearly equal degrees, the *pabulum*, or food of plants; but in their union, the purposes of vegetation are most completely answered.

The precise quantities of each, necessary in this union, or whether they ought to be equal, is neither easy nor very material to ascertain, in a general or theoretical way; since that point is best determined in practice, when the soil proves to be neither too stiff and adhesive, from the superabundance of clay; nor of too loose and weak a texture, from the over large quantity of sand in its composition. The happy medium in general it is, which constitutes the richest soils; but an excess towards adhesion, or stiffness, is obviously most safe.

These moulds will retain the rain sufficiently to absorb all its fructifying virtues; but not so long that it becomes stagnant, chilling, and unwholesome. They are known to experienced people, by the sight and touch; and although they adhere to the feet in passing, they may be rubbed off without any great difficulty.—The sub-soil, whether it be retentive or porous, springy or dry and warm; and the situation of the land, whether of level or irregular

ular surface; together with the exposure, form very material points in the estimate of its fertility.

The mixed or secondary earths are, Clay, which is compounded of argill and sand; Loam, or a mixture of sand and clay; Gravel, or sand and stone; Till, or iron earth; Silicious and Calcareous, sandy, stony, or flinty earth, chalk, and lime; Marl, which is composed of stone, argill, and sand, and is usually denominated after that ingredient, which may chance to predominate; thus the soapy or unctuous kind is called argillaceous; the stony, calcareous; and the sandy, silicious marl.

The various soils, compounded of the above earths, will rank under some of the following common denominations: Clays, Sands, Loams, Gravels, Chalks, Clayey Loams, Gravelly Loams, Sandy Loams, Chalky Loams, Peat and Bog, Moor and Heath. The soil of bog generally inclines to clay, that of heath, to sand. These terms are subject to an accommodating variation, and we frequently hear of a loamy gravel, as well as a gravelly loam; in the first, the gravel is supposed to be the base, and to predominate: and so of other variations.

Manuring, or amending the soil, is performed by mixing with it certain substances, known by experience to contain a portion of that matter, which is the food of plants, or to possess the property of loosening and decomposing the earths, and exciting into action their dormant virtues; by simply increasing the depth of its staple, with the addition of mould; by altering and correcting its quality, with that species of earth in which it may be deficient, as in giving friability to clay by the assistance of sand, and tenacity or stiffness to sand by the admixture of clay; by draining off stagnant water, above or below; by irrigation, or flooding with simple water, or by warping, which is, to flood the land with thick river-water, for the sake
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of a considerable settlement of mud; by paring and burning the surface; by fallowing.

Vegetable, as well as animal bodies, are furnished by nature with absorbent vessels, through which they attract, or suck up, from the surrounding earth and air, that matter destined for their nourishment: the fibres of their roots do the most material part of this office of nutrition.

The *pabulum*, or food of plants, consists, I think, obviously, of elastic and non-elastic fluids; of steam or vapour, and of water, which are drawn in various forms, from both earth and air. It is not possible, that any gross, or terrene substance, could pervade the minute and almost imperceptible organs of plants. Their food is the essence merely, or, so to speak, the *essential substance* of the bed of earth in which they are posited, in the form of *gas*, or steam; hence, probably, a given quantity of mould, after having thrown out a large vegetable weight, shall have lost scarcely any of its own, as hath often been experienced. By way of illustration, this essence may be compared with the spirituous part of alcohol, which bears no comparison in weight with the mere liquid mass. The hypothesis naturally extends to those manures, we select to replenish the earth, when exhausted of its vegetable nourishment. It is the essence of those substances, which goes to supply the defect of the soil; and experience, as old as the supposed date of the world, has proved that such as abound most in oils, mucilages and alkaline salts, are the most powerful fertilizers of land. Perhaps any substance, susceptible of putrefaction or dissolution, and which contains nothing noxious to the vegetable creation, is convertible to the food of plants.

The above desultory ideas ought, by no means, to be construed into any intended disrespect to the authority of the celebrated Hassenfraz: The labours
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of such eminent professional men ought to be accepted by the world with gratitude, and their opinions received with all but implicit deference. I am aware that the theory of the carbonic substance, or the coaly residuum of substances, as the food of vegetables, is now generally received by our chemical agriculturalists. But I beg leave to ask, are we sure there is any novelty in this discovery, or does the novelty consist, as in certain other discoveries, purely in the nomenclature? Virgil, Cato, and Columella, I believe, were equally well aware with us moderns, that vegetation would be promoted by the charcoal of almost any substance; that the putrefactive heat, as well as actual combustion, might be likely to produce a coaly substance; and that such substance must necessarily be soluble, before it could become the food of plants.—If it be pretended, that carbon is exclusively the food of plants, I conceive such a notion is contradicted by every day's experience, which demonstrates to our senses, that vegetables are nourished by the essence or vapour of fresh dung, as well as by that which is arrived at its carbonaceous state.

It is in course to give a catalogue of the various animal and other substances, which are proper for manure, and it has at least one particular use, that of reminding the cultivator of some articles within his reach, which might else have escaped his notice; but respecting the particular application of these, dependent as it is upon such numerous contingencies, which may entirely alter the state of the case, every one must be left to his own experience and discretion. None other than general rules, founded on evident and permanent principles, can, with propriety, be given; as the numerous agricultural instructions, perfectly ludicrous from their direct opposition, sufficiently evince.

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The principal manures will be found in the following list: the excrements of all animals, including bones, hair, blood, and offals; feathers; the auxiliary earths, chalk, lime, rubbish, &c. before-mentioned; putrefied vegetables, bark, wood, and leaves; soot; ashes; malt and rope-dust; saw-dust; salt; woollen rags; scrapings of oiled leather; sea-water and weeds; fish-blubber; oil; river and pond mud and weeds; fullage or sweepings of streets and roads; growing vegetables, turned in by the plough, or green manures.

The principle seems to have obtained general assent, and with good reason, that animal manures are the most powerful, and that the excrements of fat, particularly corn-fed animals, are far superior to those which are lean and store-fed.

The perfection of the culture of lands consists in returning to it, through the medium of manures, the whole of that essential substance, extracted by the crops; in the total eradication of weeds, and in the dispersion of stagnant water.

Prefupposing industry and capital, nothing can be more easy, than to keep a farm, as well as a garden, in constant heart; for the bountiful earth allows us the advantage at starting, not requiring any returns, until it has presented us with various crops. As to the pretended impossibility of entirely extirpating weeds, setting aside the example of other countries, China particularly, in the husbandry of which not a reed is to be seen, every one, possessed of industry and resolution, may be convinced it is a mere pretence. *We have only to kill them by all the various and well-known methods, as fast as they come, and there must necessarily be an end to their coming.* I freely acknowledge this to be an expensive process in the beginning; but I fully defy any man to disprove that it is true economy in the end.

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Manure,

Manure, amply sufficient to recruit the exhaustion of cropping, ought to be produced by the animals kept upon the farm, with the assistance of the straw; besides which, nothing, even to the most minute trifle, should be neglected, which may, in any way, contribute to enrich the compost dung-hill. Thus every farmer, if he shall so choose, may be absolutely independent in this respect, in full and safe reliance on his own home resources.



ON CHANGE OF SEED.

FROM THE "NEW FARMER'S CALENDAR," PAGE 375—381.

IN treating of the Course of Crops, I have acceded to the general idea, that nature affects variety; although, when viewed through the medium of her own spontaneous efforts, she gives the most striking proofs of a contrary tendency; and, perhaps, our conviction, or our deception, arises from a deficient statement of the case.

The three famous propositions of Tull, on the change of crops, appear to me unanswerable, upon any philosophical, or fairly experimental ground. "1. *That plants, of the most different nature, feed on the same sort of food.* 2. *That there is no plant, but what must rob any other plant within its reach.* 3. *That a soil, which is proper to one sort of vegetable once, is, in respect to the sort of food it gives, proper to it always.*" These propositions militate not against the truth, that various plants affect various soils; but the vegetable *pabulum*, or food, is the same thing in all.

On change of seed, or of individuals, of the same species, we are generally guided by analogy, with
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the prevailing notion on the change of species; granting it a delusion, it is surely a very harmless one; but, in certain cases, it may be of some little consequence to a farmer, to be convinced, that no harm can happen, nor any defect of produce arise, from re-sowing the seed on the same ground whence it was produced. The earth, of herself, produces and re-produces most luxuriantly, from the same seed, for centuries, or forever, without weariness, or desire of change.

The idea of a necessity for occasionally crossing the breeds of animals has prevailed in a similar degree, and does still prevail, notwithstanding the most satisfactory proofs of the futility of such maxims, derived from the invariable success of breeding in-and-in.

If a man possesses seed, perfect in its kind, and the species equally adapted to the soil, he may, perhaps, get harm, but surely ought to expect little good, from a change. There can arise no possible benefit from crossing with inferior stocks; but changes ought to be indefatigably pursued, until the best be obtained; then remain the grand objects, either of further improvement, or the prevention of degeneracy; and these will ever slip through the hands of men, unpossessed of the virtue or the habit of persevering industry. No pains, no expense, no distance, are ever too great, to obtain the best stock, dead or alive, or the best implements.

To sow imperfect seed, is a practice nearly allied to madness, or folly; a folly, of which our wives are never guilty, who ever take especial care to put new, at least sound eggs, under their hens; and seeds are the eggs of vegetables. More cannot be had from a thing than it possesses; and if we sow bad seed, or seed deficient in the true seminal qualities, we ought to expect a crop defective, either in quality, quantity, or both.

Green

Green and shrivelled corn, such as has not stood long enough to arrive at maturity, should never be sown; much of it, as I have experienced, will not vegetate at all; of that which succeeds, the sample, at least great part of it, will be lean and steely, most clearly demonstrating its hereditary defect.

I would certainly not sow black, or smutty wheat, by choice; but, of two evils, I think I should prefer heavy black wheat, for seed, to the unripe, lean, and shrivelled. Smutty wheat often happens to be the plumpest and most weighty of the crop, and its flour as full of the vegetable gluten, which arises from the blight having taken place subsequent to the perfect formation of the kernel, whence, from its maturity and power of resistance, the infection may be no more than skin-deep. The celebrated axiom, in breeding-cattle, that "*like produces like*," so successfully proved in practice, may, no doubt, be equally depended upon in the vegetable creation; and it is sound and rational advice in Marshall, to select seed from the most forward and vigorous plants, of every species: yet it is an old opinion, that the smallest grained wheat, if plump and perfect, is as likely as any to produce a luxuriant plant, and fine stock; whence an advantage in sowing such, with respect to the measure, as the object is the number of kernels.

The greatest attention should be paid to the cleaning seed-corn, which ought to be perfectly free, not only from the seed of weeds, but from every weak and apparently unfruitful kernel, since these last, granting they vegetate, may only help to encumber and exhaust the soil with unhealthy and useless plants. I never think the expense thrown away, of having seed-wheat picked over carefully by the hand.

The opinions and practice of Mr. JOSEPH COOPER, a reflecting and philosophical American cultivator, appear

appear to be perfectly decisive on this interesting subject. Mr. Cooper, disregarding the ancient prejudice of a necessity for the change of seeds and roots, and the procurement of them from distant and different soils, on the contrary, has, for many years, been in the habit of selecting the best seeds and roots of his own; and although he has continually sown and planted them on the same soil, every article of his produce is greatly superior to those of any other person who supplies the market, and they seem to be still in a state of improvement. This, without his knowing it, is the very same plan that was adopted by Mr. Bakewell, in England, with respect to animals.

Mr. Cooper was led to his present practice, which he began more than forty years ago, by observing that vegetables of all kinds were very subject to change, with respect to their time of coming to maturity, and other properties, but that the best seeds never failed to produce the best plants. Among a great number of experiments, he particularly mentions the following: About the year 1746, his father procured seeds of the long watery squash; and though they have been used in the farm ever since that time, without any change, they are, at this time, better than they were at first.—His early pease were procured from London in 1756, and though they have been planted in the same place every season, they have been so far from degenerating, that they are preferable to what they were then.—The seeds of his asparagus he had from New-York in 1752, and though they have been treated in the same manner, the plants have been greatly improved.—Mr. Cooper has experienced precisely the same result with potatoes, and attributes the failures of other people to their planting the refuse, instead of the largest and best shaped.—Mr. Cooper is also careful to sow the plants, from which he
raises

raises his seed, at a considerable distance from any others. Thus, when his radishes are fit for use, he takes ten or twelve which he most approves, and plants them at least one hundred yards from others that blossom at the same time. In the same manner he treats all other plants, varying circumstances according to their nature.

In 1772, a friend sent him a few grains of a small kind of Indian corn, not larger than goose-shot, which produced from eight to ten ears on a stock. They were also small, and he found that few of them ripened before the frost. Some of the largest and earliest of these he saved, and planting them between rows of a larger and earlier kind, the produce of them was much improved. He then planted from those that had produced the greatest number of the largest ears, and that were the first ripe; and the next season, the produce, with respect to quality and quantity, was preferable to any that he had ever planted before. From this corn he has continued to plant ever since, selecting his seed in the following manner. When the first ears are ripe enough for seed, he gathers a sufficient quantity for early corn, or for replanting; and at the same time that he wishes his corn to be generally ripe, he gathers a sufficient quantity for the next year's planting, having particular care to take it from *stalks that are large at the bottom, of a regular taper, not very tall, of good sizeable ears, and of the best quality*; these he dries quickly, and from thence he plants his main crop; and if any hills be missing, he replants from the seeds that were first gathered, which he says will cause the crops to ripen more regularly than they commonly do, and which is of great advantage. The common method of saving seed-corn, by taking the ears from the heap, is attended, he says, with two disadvantages; one is, the taking the largest ears, of which, in general,
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only one grows on a stalk, which lessens the produce ; and the other is, taking ears that ripen at different times.

For many years, he renewed all the seed of his winter grain from a single plant, which he had observed to be more productive, and of better quality than the rest, which he is satisfied has been of great use. He takes particular care that different kinds of the same vegetables do not bloom at the same time near together, by which they injure each other. On every kind of soil, Mr. Cooper prefers planting the rows of Indian corn six feet asunder each way, as nearly at right angles as may be, and leaving not more than four stalks on a hill.

It is alleged, that foreign flax-seed produces the best flax in Ireland ; but Mr. Cooper says, that when it is considered that only the bark of the plant is used, and that this is in perfection before the seed is ripe, it will appear that his hypothesis is not affected by it.—Mr. Cooper has the following instance of the naturalization of a plant in a different climate. He had some water-melon seed sent him from Georgia, which, he was informed, was of a peculiarly good quality ; knowing that seeds from vegetables that grow in a hot climate, require a longer summer than those in Pennsylvania, he gave them the most favourable situation he had, and used glasses to forward their growth, and yet few of them ripened well ; but saving the seeds of those that ripened first, and continuing the practice five or six years, they came to ripen as early as any he ever had.

The above method of managing exotic seeds has been lately found successful in France.

ON

ON THE ANALYSIS OF LIME AND MARL.

FROM THE "COMMERCIAL AND AGRICULTURAL MAGAZINE,"
PAGE 3, VOL. VII.

LIME.

IN order to judge of the goodness of Lime, the lime-stone loses much of its weight in calcination, and the lime-shells are extremely light : if the shells require a large proportion of water to flake them fully ; if it is long before they begin to fall ; if the lime-stone is not apt to run or be vitrified in the operation of burning ; if it falls entirely when it gets a sufficient quantity of water after it has been properly calcined ; if it swell very much in flaking ; and if the lime is light, fine to the touch, and of a pure white, the farmer may be satisfied that it is extremely good, and may use it in preference to any other lime, that is inferior to it in any of these respects. These rules are sufficient as to the comparative value of any two kinds of lime that may be opposed to one another, and may be relied upon as sufficiently accurate for the ordinary purposes of the farmer. But that such as may discover a new quarry of lime-stone, and who wish to ascertain with certainty its real value, before they put themselves to any expense about it, will do well to employ the following more accurate, and, in that case, more easy analysis.—As all calcarious matters are capable of being dissolved in acids, and as no earthy matter can be dissolved in them, it follows, that if a sufficient quantity of acid is poured upon any body, that contains calcarious matter, this matter will be quickly dissolved, while the others are left behind ; and the proportions of each may be accurately ascertained.

To try the exact value of any kind of lime-stone, or other calcarious matter, take a quantity of aqua-
fortis

fortis or nitrous acid, or spirit of salt, or muriatic acid. It may be observed, that all the mineral acids effervesce, and unite with calcareous earths. But as the sulphuric or vitriolic acid (spirit or oil of vitriol) does not dissolve the calcareous matter, but forms a new concrete that still retains its solid state, it is not fit for this experiment. And as it sometimes happens that a little vitriolic acid is mixed with either the nitrous or muriatic acids, it is necessary to be certain that this is not the case before they are employed in this experiment. The easiest way of trying if these acids are free from the vitriolic, is to put a little chalk into them before employing them. If the acid is pure, the chalk will dissolve very readily; but if not, some part of the chalk will fall to the bottom, in the form of a pure white sediment. When this is the case, add small bits of chalk, by little and little, till no more of that white sediment appears; after which the acid may be kept for use as sufficiently pure. If the nitrous acid is so strong as to have a flight brown or reddish appearance, it ought to be diluted with water till it assumes a greenish look. As it is bought in the shops for the use of the diers, &c. it is usually weak enough.—If the muriatic acid is so strong as to have a bright yellow colour, or emits fumes when the bottle is opened, it ought to be diluted, by adding water till it assumes almost a colourless transparency, with a very faint tinge of yellow. When they are thus prepared, (either of these acids may be used indiscriminately for this experiment, as they are equally proper) put them into a glass, or earthen vessel; add to that, by little and little, a known quantity of the matter you mean to examine, which had been previously dried and reduced to powder. After each addition, suffer the violent effervescence or ebullition that will ensue to abate before more is added. When

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the whole of the powder is put to the acid, and the effervescence entirely subsided, stir it about several times with a piece of tobacco-pipe, and allow it to remain for some time, that the acid may act upon every particle of the matter, and thoroughly dissolve it: and to be certain that there has not been too little acid, put a few drops of fresh acid to the solution, which will excite a fresh effervescence, if the whole is not fully dissolved. When no change is produced by this addition, it is a certain proof that the whole of the calcareous matter is already dissolved. Take then a piece of filtering paper, thoroughly dry, the weight of which is also to be known, fold it properly, and put it into a glass funnel; pour the whole of the solution, with the matter that may have subsided, into the funnel, and allow it to filter through the paper slowly; when the fluid part has thus drained off, fill up the filter again with pure water, to wash off the whole of the saline parts from the residuum or matter that remains undissolved.

Add water in this manner till it comes off without saline taste; suffer it then to drop off entirely, dry it thoroughly, weigh the paper with its contents; the difference between which, and what the powder and paper were at the beginning, is the whole weight of the calcareous matter, so that its proportion to the whole mass is perfectly ascertained.

MARL.

AS all Marls effervesce, or raise up frothy bubbles when acids are applied to them, and as water alone frequently produces the same effects, when poured upon dry clay, it may be necessary, in order to guard against mistakes in making trials upon substances suspected to be marl, to let them remain a little time in mixture with water, previous to their being subjected to the test of acids. The best

best or richest marls being such as contain the largest proportion of calcareous earth ; it frequently becomes a matter of importance to farmers, to be able to ascertain the quantities, some being found so poor in this material, as to have only a twentieth or thirtieth of their weight, in order to decide on their advantage, in preference to lime, chalk, or other substances to be brought from a distance. A simple and easy method, founded on the knowledge that this earth contains about forty per centum of its weight of fixed air, or carbonic acid, is merely by saturating the marl with the nitrous or muriatic acid, and marking correctly the loss of weight which it sustains by extrication of the fixed air. Thus, if two hundred grains of marl be introduced into a vessel, with a little water and muriatic acid poured upon them till the bubbles cease to rise, the loss of weight being then found to amount to forty grains, the marl contains one hundred and sixty grains of calcareous earth. The proportion of calcareous earth contained in different marl, may also be determined by dissolving it, by means of the muriatic acid, diluting the liquor with water, passing it through a filtering paper, and then precipitating the calcareous earth from the clear liquid, by a solution of some fixed alkaline salt.



ON THE CULTURE AND PREPARATION OF HEMP IN CANADA.

*Addressed to the Lords of His Majesty's Committee of
Council for Trade and foreign Plantations.*

FROM THE COMMERCIAL AND AGRICULTURAL MAGAZINE, VOL. VI.

“ MY LORDS,

“ **T**HE importance of this subject has been fully certified, in a letter presented to your Lordships by my father, in January last, stating, among other

other observations, that upwards of thirty thousand tons of hemp are annually imported into England, that I shall not enter into these particulars. I shall therefore now observe, that as it does not come properly within the views of the Society of Arts, &c. to furnish instructions and give opinions upon general culture, but rather to publish the experiments of others, and leave deductions to be drawn from facts; yet, as the people of Canada have repeatedly applied to this country for information upon the mode of cultivating hemp to advantage, and having, as a member of the Society, attended various discussions upon the subject, I have been led to examine the whole culture and preparation of hemp in different countries, and am induced to lay before your Lordships such information and short instructions as I think will be conducive to establish this great object in Canada; and have arranged the whole under distinct heads, as the operations follow in succession."

On the Culture of the Hemp, and Choice of Seed.

THE soil for hemp should be rich, deep, light, and moderately dry: of this description, much can be found on the banks of creeks and rivers in Canada. If the ground has not had a previous summer fallow, it should be ploughed once in the autumn, and twice in the spring; it should then be harrowed extremely fine with iron-toothed harrows, and sown with the hemp-seed, broad-cast, after the rate of two bushels of seed for an arpent, or four-fifths of a statute acre; the seed should then be harrowed in, by a harrow with small iron teeth set close.

Much care should be taken in the choice of hemp-seed: that of the last year's growth should be chosen, and such as has not been heated in the carriage.

age. Choose such seed as appears fresh, firm, and bright ; prove it by rubbing it between your hands : if it suffers this without breaking, and becomes brighter, it is a good sign ; but if it be broken and made dusty by rubbing, it is unfit for the farmer's use.

Whatever seed is sent from England should be packed in small casks, and great care taken to procure what is new and of the best quality. Before it is depended on for a crop, a small quantity should be sown in good earth, in a warm, secured situation, to see that it will vegetate. It has been supposed, that keeping the hemp-seed in a cellar, two or three weeks previous to its being sown, will assist its vegetation. The best time for sowing hemp is between the first and twentieth of May, according as the season is favourable : when it is sown, it should be carefully guarded against birds till firmly rooted in the ground.

The hemp plants are of two kinds, viz. the male, which yields a farina, or powdery matter, and the female, which bears the seed. The action of the male farina upon the female plant is necessary for the production of the seed, and its effects may be promoted by artificial agitation, at the time when the male plants are plucked from among the female, as hereafter mentioned.

The male hemp will be ready to pull, about the second week in August : its ripeness may be known from the farina or powder which it yields on agitation ; also, from the leaves turning yellow, and the stems a whitish colour.—As it is of great consequence to raise, at present, as much seed as possible in Canada, I would recommend the following plan to be now adopted for that purpose, which may be deviated from at a subsequent period, when seed is plentiful there.

When the male hemp is well ripened, let the persons,

sons, who pull the hemp, clear passages through the field, of about two feet wide, and six feet distance from each other, by pulling up the male and female hemp, which grow promiscuously within the said space of two feet. Let the hemp thus plucked be carried to other ground in the neighbourhood, and spread thereon about an inch thick: after it has been thus laid for two or three days exposed to the sun and air, turn it with a small pole, and let it lie a day or two more; then bind it up in bundles, about the thickness of your thigh, or near three quarters of a yard in circumference, and either proceed to water-rot it, as it is termed, immediately, as hereafter directed, or house it from rain, till a more convenient opportunity offers for the purpose. I have before observed, that beds of the hemp, of about six feet wide, should be left growing, until an intermediate space of two feet wide had been cleared, and the hemp which grew thereon carried away. You must then proceed to pull up the male hemp which was left growing among the female hemp, leaving the latter to grow with as little injury as possible until the seed is ripe. The male hemp may be dried in the intermediate space of ground above-mentioned, and made up in bundles as the former.

Method of collecting Hemp-Seed.

The female hemp should remain growing till the seed is fully ripe, the signs of which are the opening of the pods wherein the seeds are lodged, so much, that you may just perceive the seeds therein: they will have a brownish appearance.

It may probably be the first or second week in October before the female hemp should be pulled; it should then be carefully pulled to avoid shedding the seed, and be bound in small bundles, and set to dry,

dry, with the root ends downwards, like corn in sheaves. Avoid losing the seed in pulling or drying, and when the bundles are dry, you should have a wooden stool, with a sheet or blanket under it, and, by striking the hemp against the stool, to beat the seed from it into the sheet or blanket, breaking your hemp as little as possible.

After you have separated the seed from the hemp, either by beating it as above, or by thrashing it subsequently, you must be careful of the seed, particularly whilst it is new, to prevent its heating, which is best guarded against by frequently turning it; it should then be kept in a dry place, but not too close, for the air will assist in preserving it.

I have been very particular in giving directions about preserving the seed, in order that good seed may be procured in Canada, without the necessity of always sending it from England, and to avoid the risk of bad seed being sent from hence. I shall now return to the relation of the method of preparing hemp, which had been previously plucked, and was ready for the water-steep, or water-rotting.

Water-steeping or water-rotting Hemp.

This operation is performed by placing the hemp, which had been previously made up in bundles about the thickness of a man's thigh, after drying it in the air, in a pond containing about five or six feet of water, and free from mud: the bundles of hemp should be laid therein across each other, and close together, part of the heads one way, and part the other, the whole covered with water, and kept underneath it by stones, weights, or levers, till properly steeped, which may be known by taking out a bundle and washing it: if the leaves come off freely, the coat opens and easily separates from the rind or stalk, it is enough; if not, it must lie longer,

er, under careful observation, till ready. When the hemp is found to be sufficiently steeped, the bundles must be taken out, one by one, and washed to separate the filth and loose particles; it should then be set on the root ends to drain, the bands be untied, and the hemp placed against a fence exposed to the sun and air, that it may be thoroughly dried. Where the convenience can be had of filling a pond with water and letting it off at pleasure, such a situation should be preferred; but otherwise a common pond will answer.

In warm weather this operation of the water-steep may be performed in four or five days; in colder weather it will require eight or ten, and in very cold weather eighteen or twenty days may be necessary.

The intent of this process is by a gentle fermentation to separate the gummy and mucilaginous matter from the fibres of the hemp, with which they are intermixed, and to occasion the bark or rind on the outside of the fibres to be afterwards more easily detached by the brake.

Of the Management of Hemp by the Brake.

After the hemp has been watered and well dried, it is fit for the brake. If it cannot be sufficiently dried in the open air, it may be done by drying it carefully upon sticks placed across, about four feet above a gentle fire; the hemp may be laid thereon about six inches deep, and carefully turned, from time to time, to be equally dried. In the hemp countries, wind and water mills, with particular machinery for the purpose, are contrived to break and prepare the hemp in a more cheap and expeditious manner; but in a country where a manufacture is in its infancy, the most plain and simple methods must be adopted, and such machinery be used as the farmer
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can make himself. I have therefore added a drawing and description of a hand-brake, and other necessary implements for preparing hemp, which will answer the purpose in Canada.

To brake the hemp, the person employed takes in the left hand a handful of hemp, and in the other the upper jaw of the brake; the hemp is laid across, between the two jaws, and by raising and letting fall the upper jaw several times with great force, it brakes the dry stems under the rind that surrounds them. By this means, the gummy matter and pith are made to quit the hemp, and the operation is continued, till the whole handful be perfectly broken. The hemp is then stretched out on the ground or table, and when about two pound weight is thus prepared, it is made into a parcel, by doubling and twisting it slightly, and is then called a head of hemp or undressed stuff. A woman may brake from twenty to thirty pounds of hemp in this manner, in one day.

On Scutching Hemp.

After your hemp has passed the brake, it must be scutched in the following manner:—Take as much hemp in your left hand as you can conveniently hold, and with your other hand, having broken the straw of the hemp, lay it over the edge of the scutching-board with the roots foremost, and beat it downwards with the scutcher along the side of the board, turning and winding it with your left hand as you scutch it, till most of the straw and dirt is beat out.

When that end is done, turn the other, and scutch it in a similar manner; then lay that handful aside and proceed with another, till the whole is finished; then tie the hemp up in bunches, and

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lay it in a place moderately dry, until you have occasion to use it. The intent of this operation is to beat out and detach the rind and dirt previously loosened by the brake.

Method of Heckling Hemp.

When hemp is intended for coarse yarn, it need only be heckled with a large toothed heckle; but if for finer uses, it must be begun with a coarse heckle, and afterwards passed through one or more fine heckles, as occasion may require.

The business of the heckler consists in separating throughout the whole length, the fibres of the hemp, which the brake and scutcher have divided only in part. The common coarse heckle is about 21 inches by 6 3-4, the teeth in the rows are about 1 3-4 inches asunder, and extending 9 1-2 inches from the board in which they are fixed; they are placed in a quincunx order, so that the teeth of the second row are in the centre of the space of the first row. By drawing the hemp through the heckle, the teeth carry off a part of the gum contained amongst the fibres of the hemp in the form of dust, and by dividing the filaments, separates entirely the heterogeneous matter contained among them. To effect this purpose, the heckle being fixed on a plank, one side of which inclines from the workman, he takes a handful of the hemp, which grasping in his right hand, he draws through the heckle, holding the other part of the hemp in his left hand to prevent its being entangled. After one end of the hemp is sufficiently heckled it is reversed, and the same operation performed on the other.

GENERAL OBSERVATIONS.

FROM accurate accounts lately received from Canada, it appears, that an acre of good land in
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corn will not produce above half the value to the planter, that the same land will yield there in hemp; and that hemp may be grown successively on the same land many years to advantage, when corn will not. An acre or two of land, it is agreed, may be planted with hemp on each farm there, without interfering with other business. The present account is calculated for those persons in Canada, who have not been previously accustomed to the culture of hemp, and who have not the advantage of large machinery to complete its preparation.

The whole of the business, even to the making of the implements here described, may be accomplished by the planter, and is sufficient for the establishment of this great national object, and of eventually preserving to the British empire, the annual sum of 1,500,000*l.* sterling.

If your lordships will think proper, in the first instance to send some good hemp-seed to Canada to be sold at moderate prices, but not given away; and if some persons are appointed to purchase on fair terms the hemp prepared in Canada, and send it to England, a few years will establish this trade on so firm a basis, that no further protection from government will be necessary. If my observations on this subject meet your lordships' approbation, it is the only gratification I desire. My wishes to promote the interest of this empire, and to fulfil your lordships' request suggested to the Society of Arts in January last, have induced me to make the present attempt individually for that purpose.

I have the honour to be, with high respect,
my lords, your very obedient servant,

No. 19, JOHN STREET,
ADELPHI, *June 17th, 1802.* }

JOHN TAYLOR.

PREPARATION OF CHEESE IN ENGLAND.

FROM THE "COMMERCIAL AND AGRICULTURAL MAGAZINE,"
VOL. 5th.

CHEESE, a species of solid food, prepared from curdled milk cleared of the whey, and afterwards dried for use. As this article constitutes a material part of domestic consumption, we find, in almost every country, one or more places celebrated for the superior quality of their cheese. Hence we propose to enumerate the principal sorts of this manufacture, both at home and abroad ; introducing also an account of the mode in which they are prepared.

1. **STILTON CHEESE** is produced in the town of that name, in the county of Huntingdon ; and, from its peculiar richness, and flavour, is sometimes called English Parmesan. The process of making it is as follows : the night's cream is put to the morning's milk, with the rennet ; when the curd is come, it is not broken, as is usually done with other cheese, but taken out whole, and put into a sieve, in order to drain gradually. While draining, it is pressed, till it becomes firm and dry ; when it is placed in a wooden hoop, or box, made to fit it, as it is so extremely rich, that, without this precaution, it would be apt to separate. It is afterwards kept on dry boards and turned daily, with cloth binders round it, which are tightened as occasion requires. After being taken out of the hoop, the cheese is closely bound with cloths, which are changed every day, till it acquires sufficient firmness to support itself ; when these cloths are removed, each cheese is rubbed over daily, for two or three months, with a brush ; and, if the weather be damp, or moist, twice a day : the tops and bottoms are treated in a similar manner every day,
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even before the cloths are taken off. Stilton cheese is sometimes made in nets, resembling cabbage-nets; but these are neither so good, nor so richly flavoured, as those prepared in the manner before described. Although the Stilton farmers are in much repute for their cleanliness, they take but little pains with the rennet; as they, in general, cut small pieces from the *vell* or *maw*, that are put into the milk; and, being gently agitated with the hand, break, or turn it, so that the curd is easily obtained. We venture however, to say, that their valuable cheese might be improved, and few broken ones occur, if they would prepare the rennet in the manner adopted in the west of England; namely, by keeping the *vell*, *maw*, or *rennet-bag* (as it is differently called) perfectly sweet and fresh; for, if it be in the least degree tainted, the cheese will never acquire a fine flavour. When the *vell* or *maw* is fit for the purpose, a strong solution of salt should be made, with two quarts of soft, sweet water, into which are to be introduced sweet briar, rose leaves, and flowers, cinnamon, mace, cloves, and, in short, almost every kind of spice and aromatics that can be procured. The whole must boil gently, till the liquor is reduced to three pints, and care should be taken that it be not smoked. The spices should next be strained clean, and the liquor, when milk warm, poured upon the *vell* or *maw*. A lemon may then be sliced into it, and the whole stand at rest for a day or two; after which it should be again strained, and bottled. Thus, if well corked, it will keep good for twelve months, or longer, possess a fine aromatic odour, and impart an agreeable flavour to the cheese.

2. CHESHIRE CHEESE is prepared in the following way: The evening's milk is not touched till the next morning, when the cream is taken off, and put to warm in a brass pan, heated with boiling water:

water: one third part of that milk is heated in a similar manner. The cows being milked early in the morning, the new milk, and that of the preceding night, thus prepared, are poured into a large tub, together with the cream. A piece of rennet kept in luke-warm water, since the preceding evening, is put into the tub, in order to coagulate the milk; with which, if the cheese is intended to be coloured, a small quantity of *arnotto* (or of an infusion of marigolds, or carrots) is rubbed fine, and mixed; the whole is stirred together, and being covered up warm, allowed to stand about half an hour, or till it is coagulated; when it is first turned over with a bowl, to separate the whey from the curd, which sinks to the bottom, and is then collected into a part of the tub, provided with a slip, or loose board, to cross the diameter of the bottom, for the sole purpose of effecting this separation; on which a board is placed, weighing from 60 to 120 pounds, in order to press out the whey. As soon as it acquires a greater degree of solidity, it is cut into slices, and turned over several times, to extract all the whey, and again pressed with weights: These operations may consume about an hour and an half. It is then taken from the tub, and broken very small by the hand, salted, and put into a cheese-vat, the depth of which is enlarged by a tin hoop fitted to the top. The side is then strongly pressed, both by hand, and with a board at the top, well weighed; and wooden skewers are placed round the cheese, at the centre, which are frequently drawn out. It is then shifted out of the vat, a cloth being previously put on the top of it, and reversed on a cloth into another vat, or again into the same, if well scalded, before the cheese be returned to it. The top, or upper part, is next broken by the hand, down to the middle, salted, pressed, weighed, and skewered, as before, till all the whey is extracted. This,

This being done, the cheese is again reversed into another vat, likewise warmed, with a cloth under it, and a tin hoop, or binder, put round the upper edge of the cheese, and within the sides of the vat; the former being previously enclosed in a cloth, and its edges put within the vessel. These various operations are performed from about seven o'clock in the morning till one at noon. The pressing of the cheese requires about eight hours more, as it must be twice turned in the vat, round which thin wire skewers are passed, and shifted occasionally. The next morning it ought to be turned, and pressed again, as likewise at night, and on the succeeding day, about the middle of which it is removed to the salting room, where the outside is salted, and a cloth binder tied round it. After this process, the cheese is turned twice daily, for six or seven days; then left two or three weeks to dry, during which time it is once turned, and cleaned every day; at length deposited in the common cheese-room, on a boarded floor, covered with straw, where it is turned daily, till it acquires sufficient hardness. The room should be of a moderate warmth, but no wind or draught of air, must be permitted to enter, as this generally cracks the cheese. The outsides or rinds of them, are sometimes rubbed with butter, or oil, in order to give them a coat.

3. GLOUCESTER CHEESE is made of milk immediately from the cow; but which, in summer, is thought too hot, and is therefore lowered to the requisite degree of heat, before the rennet is added, by pouring in skim-milk, or, if that will not answer, by the addition of water. As soon as the curd "*is come*," it is broken with a double cheese-knife, and also with the hand, in order to clear it from the whey, which is laded off. The curd being thus freed from the principal part of the whey,

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is put into vats, which are set in the press for ten or fifteen minutes, in order to extract all the remaining liquid.

It is then turned out of the vats into the cheese-tubs again; broken small, and scalded with a pail full of water, lowered with whey, about three parts water to one of whey; and the whole is briskly agitated, the curd and water being equally mixed together. After having stood a few minutes, to let the curd subside, the liquor is poured off; and the former collected in a vat, the surface of which is, when about half full, sprinkled with a little salt, that is worked in among the curd. The vat is then filled up, and the whole mass turned two or three times in it, the edges being pared, and the middle rounded up at each turning. At length the curd is put into a cloth, and placed in the press, whence it is carried to the shelves, and turned, generally, once a day, till it has acquired a sufficient degree of compactness, to enable it to undergo the operation of washing.

4. WILTSHIRE CHEESE. The milk which produces this cheese is run, as it comes from the cow, or as it happens to be lowered, by a small quantity of skim-milk mixed with it. The curd is first broken with the hand and dish, care being taken, in first crushing the curd, to let the whey run off gradually, to prevent its carrying away with it the "fat" of the cowl. For thin cheese, the curd is not broken so fine as in Gloucestershire; for thick cheese it is crushed still finer; and, for what is called *loaves*, it is in a manner reduced to atoms. The whey is poured off as it rises, and the curd pressed down. The mass of curd is then *pared down*, three or four times over, in slices about an inch thick, in order to extract all the whey from it, pressed and scalded in a manner similar to the Gloucester cheese. After separating the whey,
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the curd is in some dairies, re-broken and salted in the bowl; while in others, it is taken out of the liquor and salted in the vat; thin cheeses being placed, with a small handful of salt, in one layer; thick ones, with two small handfuls, in two layers; loaves, with two handfuls, in three or four layers; the salt being spread, and rubbed uniformly among the curd. Wiltshire cheese is commonly salted twice in the press, where it remains, in proportion to its thickness; thin cheeses, three or four, *meals*; thick ones, four or five; and *loaves*, five or six.



POTATOES FOOD FOR CATTLE.

FROM THE "FARMER'S CALENDAR. LONDON, 1802.

OF raw *potatoes*, a middling ox will eat a bushel in twenty four hours, with which the common allowance of hay is ten pounds. A sheep will eat a gallon in the same time, with a small quantity of hay, said by some to be so small, that half a pound per day will suffice. A horse will require, from half a peck to a peck per day, with hay. Potatoes have proved worth a shilling per bushel, for fattening stock of all sorts (swine excepted) on an average of years. The Gold-finder, Champion-potatoe, and Golden-globe, seem to have the preference. Mr. Mayo, of Suffex, fatted yearly 6 oxen, 2 steers, and four cows, or heifers; killed one of 160 stone, that had 32 pound loose fat within him. An ox, of 140 stone, ate rather more than a bushel of potatoes per day, and 10 pounds of hay. Has had beasts on turnips, that ate three bushels per day, and as much as if they had no other food. With this feeder oxen fed as fast on potatoes, as on oil-cake. I this day con-

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sulted a Surrey farmer, one of the first in the neighbourhood of the metropolis, who applied raw potatoes to the purpose of fattening beasts. He prefers them to any other food within his knowledge, when their price at market is not too high, the case at present. His practice is to put up middle sized bullocks, in October, not quite half fat, which he makes ready for the butcher in three months, allowing, as I understand, as much hay as the beasts will eat. Forty lambs ate greedily four or five bushels cut potatoes per day in December and January, and they throve well upon them; when the potatoes scoured the lambs, a little hay amended that defect.—The Rev. Mr. Fuller, of Suffex, takes up his sheep, (South Downs) from the after-grass, middle of November, to a yard, with a shed adjoining, and there feeds them on potatoes with a little hay, morning and evening, until the end of February, or beginning of March, when they are fit for market. The roots are cut into two or three slices, and given in troughs under shelter. The lambs generally cost 12 to 14 shillings, at two years old, fatted to nine or eleven stone, and sold at 4 shillings per stone. The internal fat of one weighed 15 pounds. Mr. Fuller supposes potatoes equal in fattening sheep, with corn, oil-cake, or grass. When in page 19, I treated as a whim, the feeding cattle with raw potatoes, the reader ought to understand my meaning to be *labouring cattle*. But although such considerable things are done, in the fattening way, with this excellent root in a raw state, I am sure the profit will always be greater, and the quality of the flesh much superior, from the root steamed or baked; and a commodious kiln, of a reasonable price, which would bake or roast a large quantity of potatoes, is yet an object for the attention of our ingenious artists. Raw potatoes have been found
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to injure milch-cows, rendering their milk so thin, as to be unfit even for suckling. Mr. Billingsley found the water in which potatoes had been boiled, injurious to hogs. Mr. Turner proved the same by experiment. The expenses upon potatoes have generally amounted to six or seven pounds per acre, (on which, however, a considerable reduction may be made by improved culture); and if the experiments have been accurate, an acre, producing about 350 bushels, will, with a little hay daily, completely fatten three large beasts, put up with very little flesh upon them, in from twelve to fifteen weeks, some roots being left.

HINTS ON FELLING TREES.

FROM THE COMMERCIAL AND AGRICULTURAL MAGAZINE,
Vol. VII. LONDON, 1802.

ALL forest trees, whether felled with a saw or an axe, may be cut near the ground, at the same time carefully preserving the stump and roots from any further injury.

The surface should then be made quite smooth, when the composition may be spread over the whole surface, according to the directions given in your last number. It should, however, be observed, that the composition when employed for this particular purpose, should have an equal quantity of the powder of alabaster, mixed with the dry powder, generally directed to be used, after the composition is laid on, in order to render the surface harder, and, of course, better able to resist the bad effects of the dripping of trees, of rain, frost and snow. But this addition is by no means necessary

effary in the usual application to the sides of the trees. In consequence of this process the vigour of the roots will operate so powerfully in the course of the succeeding spring, that a considerable number of buds or branches will shoot forth round the stump, which, with proper care and attention, may be trained to many valuable purposes, either straight or crooked, for knee-timber or other purposes : and by retaining only so many of these shoots, as are designed to grow for any particular intention, more than one half will be saved in point of time, according to the proportions of common growth. For if a young tree be planted in a soil, equal in quality to the site of the old stump, the shoot growing from the latter, will, in eight or ten years, attain to a size which the single plant will hardly acquire in twice that period. There are also many useful purposes of husbandry, as hoop-poles and other poles used on various occasions, for which a number of shoots may be trained from one stump, whose fertile juices will shortly rear an healthy and numerous offspring around it. Very particular attention, however, should be paid to regulate their number according to the size and vigour of the stump. It would certainly be proper to leave more of them at first than are intended to be reserved for final use, in order to draw up the sap : if too few are left, they will be liable to burst, from the superabundant flow of the juices from the old stock : to prevent which inconvenience they should be cut away by degrees, always applying the composition as they are cut, and leaving the finest stem to produce the new tree, which will in time cover the old stump, and leave nothing but a faint kind of cicatrix, at the junction of the old and new part of the tree.

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PREVENTATIVE OF FLIES DESTROYING TURNIPS.

FROM THE AGRICULTURAL AND COMMERCIAL MAGAZINE,
Vol. vii. page 76.

THE discovery of a preventative of flies destroying turnip crops, for which 200 guineas were given at Mr. Coke's sheep-shearing, is to sow two pounds of radish seed on every acre of turnip land, with the turnip seed; which is found so to attract the flies, as to prevent their proving injurious to the turnips.

HAY HARVEST.

On the Use of Salt in curing Hay, particularly Clover.

EXTRACTS FROM "MONK'S AGRICULTURAL DICTIONARY."

LAST year Mr. Rodney made ten loads of saint-foinc hay, which from repeated rains was so damaged, that his people pronounced it three quarters spoiled.

He salted it in stacking with only one bushel of salt, and it completely recovered it.

YOUNG'S EASTERN TOUR. Vol. iii. page 203.

I salted about four loads of after-pasture clover hay, that was damaged so much by rains as to be thought more fit to be made dung of than hay; but this I do aver as a truth, that my horses eat more and fed more heartily on this damaged, but *salted* hay, than they did upon that which was cut in full sap; and stacked without rain. The experiment was tried by racking them sometimes with
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one sort, and sometimes with the other. The nights they were racked with the best hay, they did not eat all that was given, but the nights in which they had the salted damaged hay, although a larger quantity was given, yet in the mornings their racks were found empty. The common quantity is a peck of salt to a load of hay.

YOUNG'S NORTHERN TOUR, Vol. i. p. 4. 1770.

MR. SCARANCKE, Hants.

As the season for hay-making is drawing near, must beg leave to recommend the salting of ricks. I am persuaded few farmers are aware of the benefit arising from this practice, particularly in stacking in sultry weather. The salt preserves the hay from overheating and becoming mildewed; it may be put together greener than otherwise, without any danger of firing. All kinds of cattle, &c. prefer inferior hay, thus managed, to the best that can be placed before them, that has not been salted; the salt assimilates with the juices of the hay, and thereby prevents too great a fermentation, and by its soporific quality gives it a superior flavour. The proper method of using it is, in building the stack, to sprinkle the salt alternately between each layer of hay, in the proportion of one hundred weight to seven or eight tons.

YOUNG'S ANNALS, Vol. vi. page 94. 1786.

MR. T. BERNARD, near Ramfey.

This practice of curing hay with salt, so much recommended in the preceding extracts, has been tried in this country and neighbourhood. The following communications to the Trustees of the Massachusetts Society for promoting Agriculture, will show with what success.

*A LETTER from Mr. ASA PACKARD, to the Hon.
GEORGE CABOT, Esq. Boston.*

Marlborough, Dec. 5th, 1803.

HONOURED AND DEAR SIR,

YOURS of 2d inst. was duly received, by post. In compliance with your polite request, I have consulted several of the most observing farmers in this vicinity, relative to the best process of curing clover. You refer particularly, in your inquiries, to the method adopted by Capt. George Williams, on which you have a partial recollection of conversing with him several years ago. His plan embraces the opinions and the prevailing practice of his most judicious neighbours. I have this day spent an hour with him, on the subject, and though he differs considerably from Dr. Dean, the experience of some years past justifies him in preferring his own method. He states the entire process as follows.

With all my labourers I enter the largest and most luxuriant growth of clover as soon as the dew is off; the fork follows the scythe as soon as possible. All that is mowed that day lies spread by 12 o'clock. About one, *before half past one*, it is turned with a fork. Towards night, say at six o'clock, it is thrown into small heaps, without a rake. Next morning, as soon as the ground is dry, these heaps are opened, not spread so as to cover the ground, but rather separated in moderate fork-loads. These are turned between 11 and 12 o'clock; and *at one* the cart should receive it, hot and heavy as it is. If dried more it will crumble, lose its leaves, its heads and its nutritive qualities.

When perfectly ready for the team, *juice* may be squeezed by the fingers from a single straw. From a wisp of it, the size of your hay-rope, a man may ring moisture, possibly a drop. Having thrown three

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or four hundred, about equally, over a ten feet scaffold, strew as many quarts of salt; then spread another stratum of hay and a similar quantity of salt, till you have thrown *half a bushel on a ton*. The top will need none.

Of his ordinary process he gave me the following illustration in a simple statement of facts.

“Last year I cut a small piece of heavy clover. My men were belated, and a part of it was standing at 12 o'clock. I managed it on that day as if it had been cut in season. The next was tolerably good hay weather, not the best. Observing some signs of rain, I put down one load (about half the piece) on my scaffold at one of the clock. It appeared rather too green. On the succeeding morning it was covered on the scaffold with a large dew. The weather on the third day was remarkably drying, and though the load left in the field was moved as early as convenient, it crumbled; it was dried too much. This I placed upon the first load. Both did well, but the bottom of the scaffold was preferable,—the more valuable of the two.”

Thus, Sir, I have realized the pleasure of stating to you particularly, the most approved process of curing clover, known in this vicinity.

With very much esteem and unfeigned respect, honoured Sir, your most humble servant,

ASA PACKARD.

A LETTER

*A LETTER from SAMUEL W. POMEROY, Esq. to the
Rev. Dr. PARKER, Corresponding Secretary to the
Society for promoting Agriculture in Massachusetts.*

Cambridge, 15th May, 1804.

SIR,

AGREEABLY to your request, I have the pleasure to relate the following experiments on clover cured with salt, about the middle of July, 1802. The produce of less than an acre of clover, supposed to be two tons when dry, was cut between 9 and 12 o'clock, and immediately spread; it covered the ground very thick; by 5 o'clock it was made up into cocks, and the next day, without opening, was carried to the barn, put upon a scaffold, and mowed in a form nearly square. As it was spread upon the mow, *two bushels of refuse salt* from the provision barrels, was strewed upon it as equally as possible; it was very green, and my foreman observed, that it would in a short time be thrown into the yard for manure.

The winter following this hay came out perfectly sweet, of a good colour, and was eaten freely by horses and oxen; even the stalks, which were large, were not left.

The beginning of last July, a field of six acres of clover, supposed, when dry, to produce ten tons, was cut from 8 to 3 o'clock, and a part spread. Before 5 o'clock the whole was made up into small cocks, some of which had not been cut two hours. The next day, none of it was opened, the carts were in the field by 9 o'clock, and before sunset the whole, which made fifteen heavy loads, was carried to the barn, put into a bay and formed a mow fourteen feet high. On each layer of clover, of about one fourth of a load, was strewed coarse Liverpool salt, in the proportion of three pecks to a ton; this clover was drier when cut than that men-

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tioned in the first experiment, though half of it was not in bloom, and few heads had turned brown; but owing to the drought it began to waste. The evening it was carted considerable heat was observed by thrusting the hand as far as one could reach into the mow; the next morning however no heat was perceived, nor was there afterwards the least appearance of fermentation. A few days after three tons more, managed in the same way, was added to the mow, which was supposed to contain thirteen tons of dry hay. The whole of this hay came out very bright and sweet; some of it has been sold in the market at a higher price in proportion to other hay at the same time, than clover cured in the common way generally bears. My horses have been kept upon it for three months past, and I never had them look so well with so little grain; they appear more fond of it than of other hay, and there is less left in the manger.

It may be proper to remark, that the weather, when the clover was cut and carried, was very fine; and that the cocks upon the moist land were turned bottom upwards half an hour before they were put upon the cart. How this method will answer in cloudy weather, or when the clover has been wet, must be determined by other experiments.

I am, Sir, with much respect, your very obedient servant,

SAMUEL WYLLYS POMEROY.

found a full experiment, though half of
was not in bloom, and few heads had turned
brown; but owing to the drought it began to
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was observed by turning the hand as far as one
could reach into the mow; the next morning how-
ever no heat was perceived, nor was there any
wards the least appearance of fermentation. A few
days after three more were arranged in the same
way, was added to the mow, which was supposed to
contain thirteen tons of dry hay. The whole of
this hay came out very bright and sweet; some of
it has been sold in the market at a higher price in
proportion to other hay at the same time, than is
yet cured in the common way, generally being
hotter have been kept upon it for three months
past, and I never had them look so well with
side grain; they appear more fond of it than of
other hay, and there is less loss in the manger.

It may be proper to remark, that the weather,
when the clover was cut and carried, was very
fine; and that the cocks upon the mow laid were
turned bottom upwards half an hour before they
were put upon the cart. How this method with-
stands in cloudy weather, or when the clover has
been wet, must be determined by other experi-

ments.
I am, Sir, with much respect, your very obedt.

SAMUEL WYLLIE TOMEROY

Dr. *The Massachusetts Society for promoting Agri-*

1802.			
July 22.	To Jacob Kuhn, paid him for one year's services - -	25	
Augt. 31.	Paid Joseph Callendar for printing 200 Certificates. - - - - -	8	56
Dec. 9.	Paid ditto for a Gold Medal presented by the Society to the Hon. David Humphreys - - - - -	48	
1803.			
Jan. 18.	Paid James Allen for his exertions in raising trees - - - - - 20.		
	Paid postage of a letter from Benj. Vaughan, Esq. - - - - - 1. 36	21	36
Mar. 16.	Paid Seth Adams the Society's premium for importing sheep - - - - -	50	
June 3.	Paid for six per cent defer'd Stock, dolls. 900 nominal - - - - -	845	11
		998	3
8.	Balance due to the Society to adjust this Account	88	39

DOLLARS 1086 42

Memorandum of the Society's property in the hands of the Treasurer.

United States six per cent Stock, nominal sum - - -	3800
Ditto defer'd ditto - - - - -	2200
Ditto three per cent stock - - - - -	583
Massachusetts State notes - - - - -	960
United States Bank stock - - - - -	1200

DOLLARS 8743

culture in Account with Thomas Lindall Winthrop. Cr.

1802.			
June 9.	By Balance due to the Society per account settled under this date - - - - -		69 94
July 6.	By 3 months Interest on 3800 dolls. six per cent stock - - - - - 57.		
	3 mos. Int. on 1300. ditto deferred - - - 19.50		
	3 mos. Int. on 583. three per cent stock - 4.37		
	6 mos. Int. on 1200. Mass. State notes - - 30.		
	6 mos. div'd. on 1200. U. S. Bank stock - - 54.		
	Rec'd. of Jacob Kuhn for sundry assessments 28.		
		192 87	
Oct. 8.	By 3 mos. Int. on 3800. six per cent stock - - 57.		
	3 mos. Int. on 1300. ditto defer'd - - - 19.50		
	3 mos. Int. on 583. three per cent stock - 4.37		
		80 87	
1803.			
Jan. 6.	By 3 mos. Int. on 3800. six per cent stock - - 57.		
	2 per ct. on ditto, ditto paid by Gov. - - 76.		
	3 mos. Int. on 1300. ditto defer'd - - - 19.50		
	2 per cent on ditto - - - - - 26.		
	3 mos. Int. on 583. three per cent stock - 4.37		
	6 mos. Int. on 1200. Mass. State notes - - 30.		
	20 per cent. on ditto, paid by Gov. - - - 240.		
	6 mos. dividend on 1200. U. S. Bank stock 54.		
		506 87	
	By sundry assessments rec'd. of Jacob Kuhn - - - -	42	
April 4.	By 3 mos. Int. on 3800. six per cent stock - - 57.		
	3 mos. Int. on 1300. ditto defer'd - - - 19.50		
	3 mos. Int. on 583. three per cent stock - 4.37		
June 3.	Rec'd of Jacob Kuhn for sundry assessments 113.		
		193 87	
		DOLLARS	1086 42

Boston, June 8th, 1803.

Errors excepted.

THOMAS L. WINTHROP.

We the subscribers, appointed a Committee by the Massachusetts Society for promoting Agriculture, at their annual meeting in January last, to examine the Treasurer's account, having attended to that business, do find the same well vouched and right cast, and a balance of eighty-eight dollars and thirty-nine cents due to said Society from said Treasurer. We also find in his hands the evidences of the property enumerated above.

Boston, June 8th, 1803.

WM. SPOONER, } Committee.
JOSHUA THOMAS, }

Officers of the Society.

CHOSER JUN 1901

JOHN WARREN, M. D. President.
THEODORE LYMAN, Ed.
Rev. JOHN T. KIRKLAND, D. D.
Hon. GEORGE CABOT, Ed.
MARTIN BRIMMER, Ed.
Hon. FISHER AMES, Ed.
JOHN AVERY, Ed. Record Secretary.
Rev. SAMUEL PARKER, D. D. Corresponding Secretary.
THOMAS L. WINTHROP, Ed. Treasurer.
AARON DEXTER, M. D. Second Vice President.
JOSEPH RUSSELL, Ed. First Vice President.
HIS EXCY. CALLEB STRONG, Ed. President.

It is a very common mistake to think that the only way to get a good education is to go to a good school. In fact, the best education is the one that you get from the people around you. The people you meet in your daily life are the ones who will teach you the most about the world and about yourself. So, if you want to get a good education, you should pay attention to the people you are around. You should listen to what they have to say and try to learn from them. This is the best way to get a good education.

Officers of the Society.

CHOSEN JUNE, 1803.

HIS Excy. CALEB STRONG, Esq. *President.*
JOSEPH RUSSEL, Esq. *First Vice President.*
AARON DEXTER, M. D. *Second Vice President.*
THOMAS L. WINTHROP, Esq. *Treasurer.*
Rev. SAMUEL PARKER, D. D. *Corres. Secretary.*
JOHN AVERY, Esq. *Record. Secretary.*
Hon. FISHER AMES, Esq.
MARTIN BRIMMER, Esq.
Hon. GEORGE CABOT, Esq.
Rev. JOHN T. KIRKLAND, D. D.
THEODORE LYMAN, Esq.
JOHN WARREN, M. D.

} *Trustees.*
